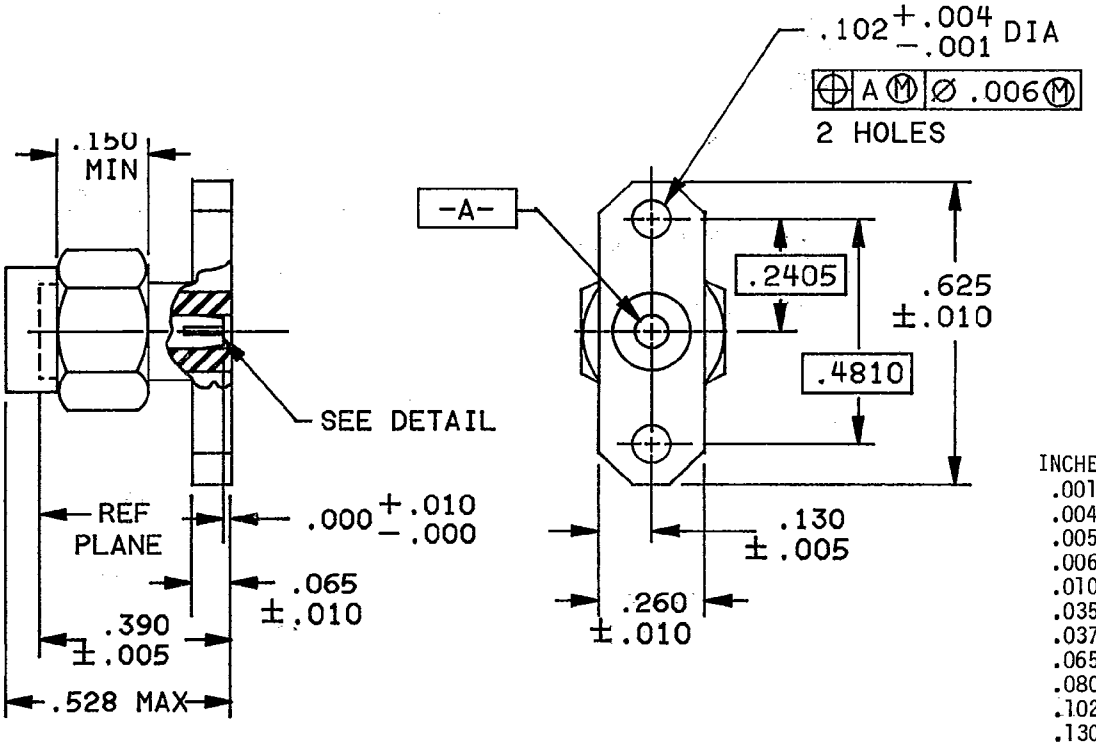
MILITARY SPECIFICATION SHEET

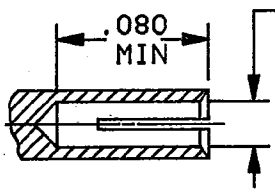
CONNECTOR, COAXIAL, RADIO FREQUENCY, STRIP OR MICROSTRIP TRANSMISSION LINE, SERIES SMA (PIN CONTACT, FLANGE AND MOUNTED RECEPTACLE)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for acquiring the connectors described herein shall consist of this specification and the latest issue of MIL-C-83517.



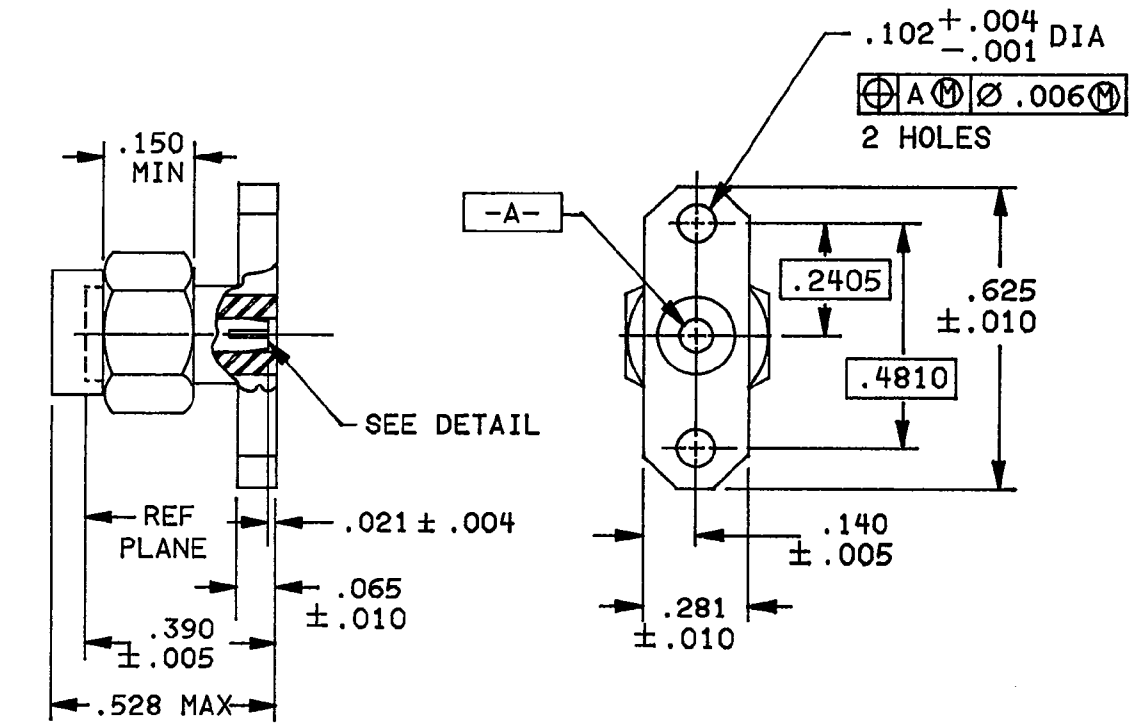
INCHES	MM
.001	.03
.004	.10
.005	.13
.006	.15
.010	.25
.0355	.901
.0370	.940
.065	1.65
.080	2.03
.102	2.59
.130	3.30
.150	3.81
.2405	6.11
.260	6.60
.390	9.91
.4810	12.22
.528	13.41
.625	15.88

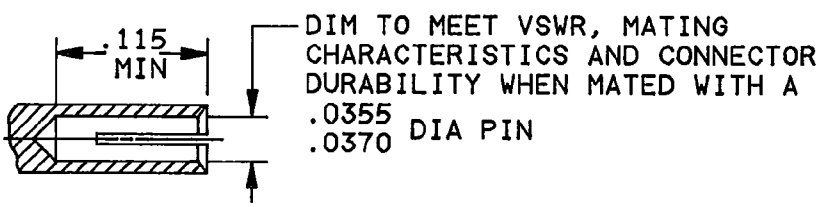


DETAIL

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. All undimensioned pictorial configurations are for reference purposes only.

FIGURE 1. Series SMA, pin contact, 2 hole (.260) flange mounted receptacle.





DETAIL

INCHES	MM
.001	.03
.004	.10
.005	.13
.006	.15
.010	.25
.021	.53
.0355	.901
.0370	.940
.065	1.65
.102	2.59
.115	2.92
.140	3.56
.150	3.81
.2405	6.11
.281	7.14
.390	9.91
.4810	12.22
.528	13.41
.625	15.88

NOTES:
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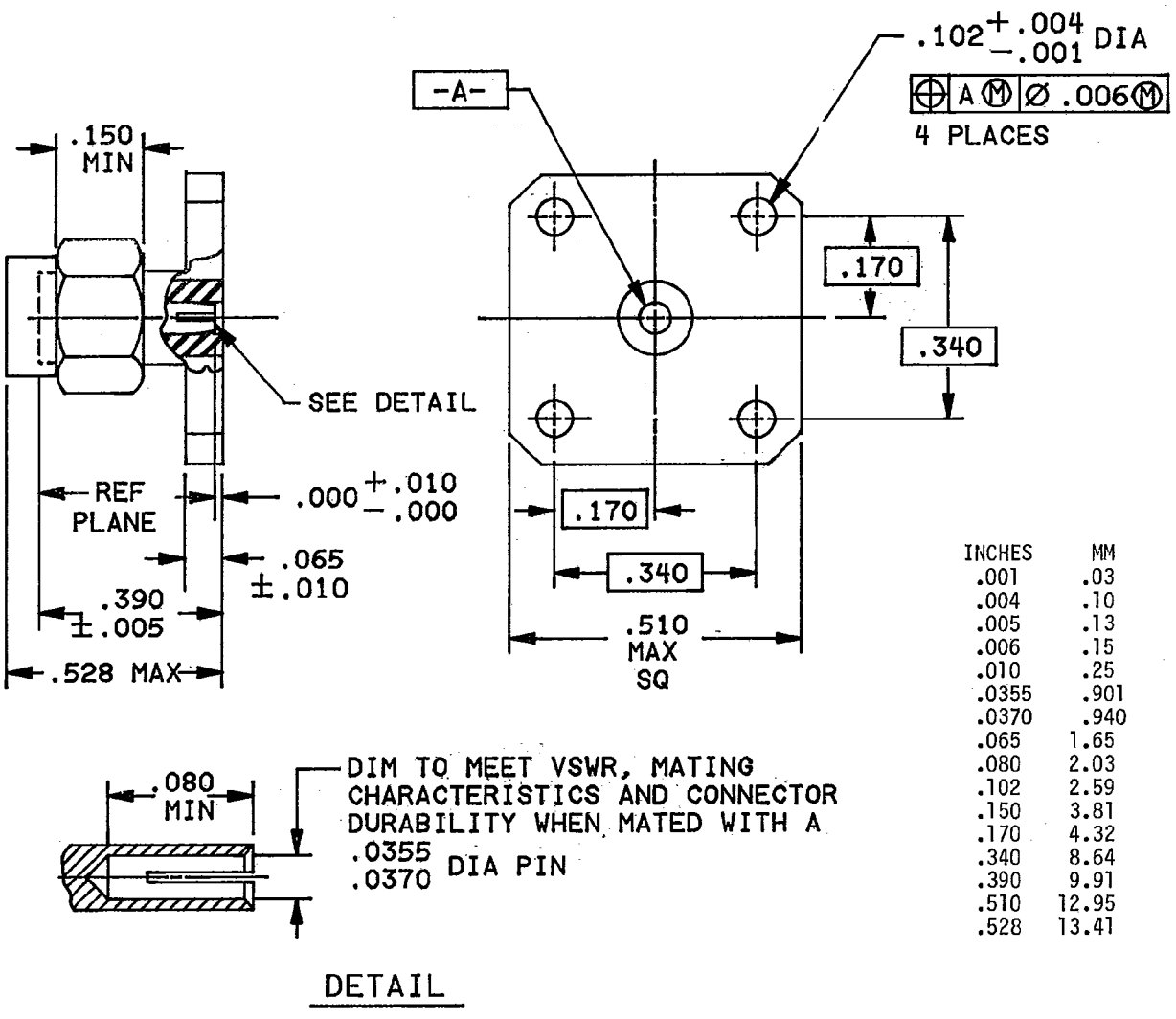
FIGURE 2. Series SMA, pin contact, 2 hole, (.281) flange mounted receptacle.



INCHES	MM
.001	.03
.004	.10
.005	.13
.006	.15
.010	.25
.0355	.901
.0370	.940
.065	1.65
.080	2.03
.102	2.59
.150	3.81
.170	4.32
.340	8.64
.390	9.91
.510	12.95
.528	13.41

NOTES:
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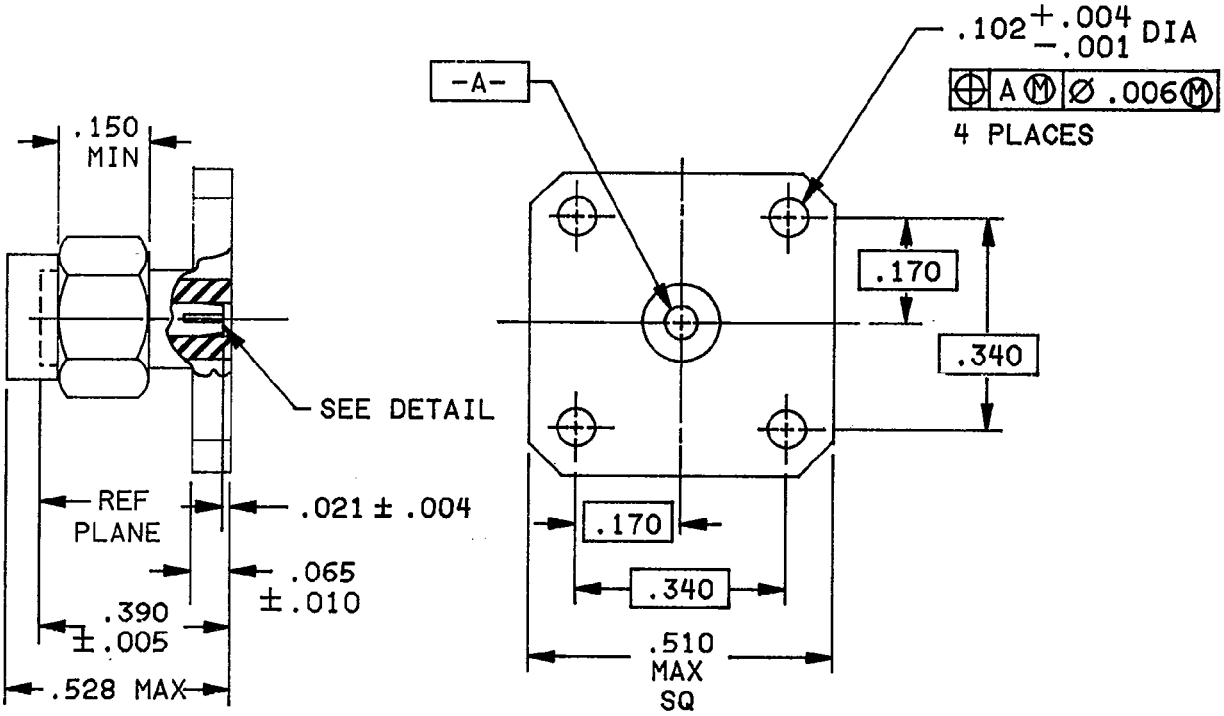
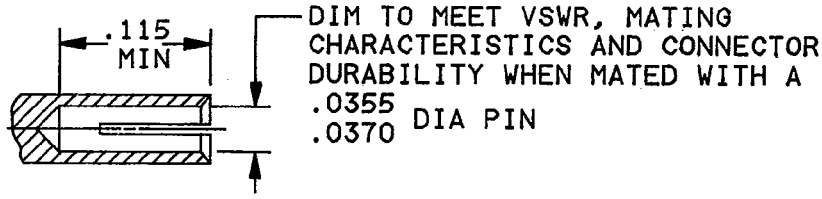
FIGURE 3. Series SMA (.080 inch) pin contact, (4 hole) flange mounted receptacle.





DETAIL

INCHES	MM	INCHES	MM
.001	.03	.065	1.65
.004	.10	.115	2.95
.005	.13	.102	2.59
.006	.15	.150	3.81
.010	.25	.170	4.32
.021	.53	.340	8.64
.0335	.902	.390	9.91
.0370	.940	.510	12.95
		.528	13.41

NOTES:
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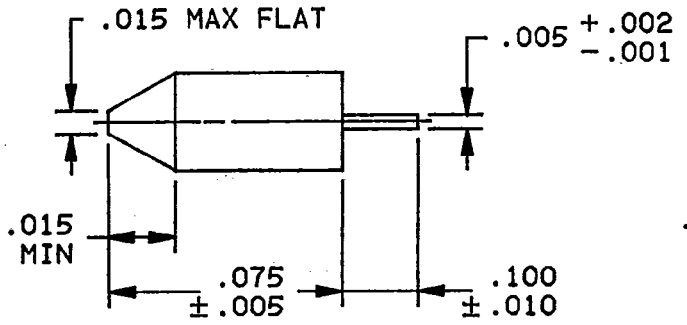
3. All undimensioned pictorial configurations are for reference purposes only.

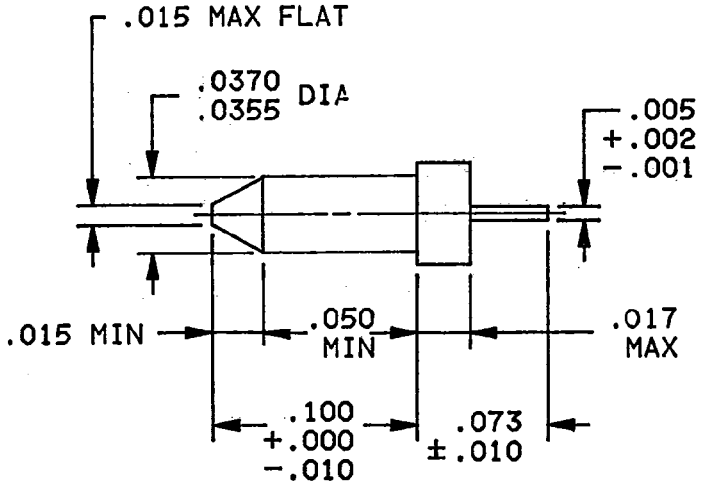
FIGURE 4. Series SMA (.115 inch) pin contact, (4 hole) flange mounted receptacle.



* FIGURE	"A" DIM
5 A	.020 ±.002
5 B	.050 ±.002

INCHES	MM
.001	.03
.002	.05
.005	.13
.010	.25
.015	.38
.020	.51
.0355	.90
.0370	.94
.050	1.27
.075	1.10
.100	2.54

FIGURE 5. Transition pin (.075 inch).



* FIGURE	"A" DIM
6 A	.020 ±.002
6 B	.050 ±.002

INCHES	MM
.001	.03
.002	.05
.005	.13
.010	.25
.015	.38
.017	.43
.020	.51
.0355	.901
.0370	.940
.050	1.27
.073	1.85
.100	2.54

NOTES:
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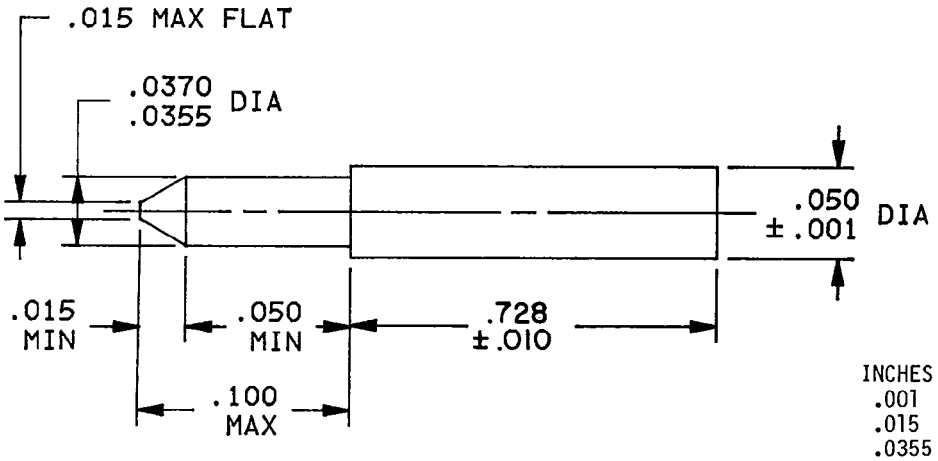
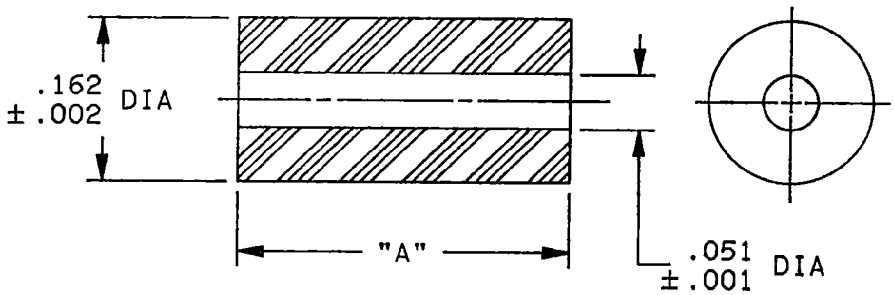
4. See Table 1.

FIGURE 6. Transition pin (.100 inch).



INCHES	MM
.001	.03
.015	.38
.0355	.901
.0370	.940
.050	1.27
.100	2.54
.517	13.13

FIGURE 7. Transition pin.



* FIGURE	"A" DIM
8 A	.070 ±.002
8 B	.132 ±.002
8 C	.625 ±.002

INCHES	MM
.001	.03
.002	.25
.051	1.30
.070	1.78
.132	3.35
.162	4.11
.625	15.88

NOTES:
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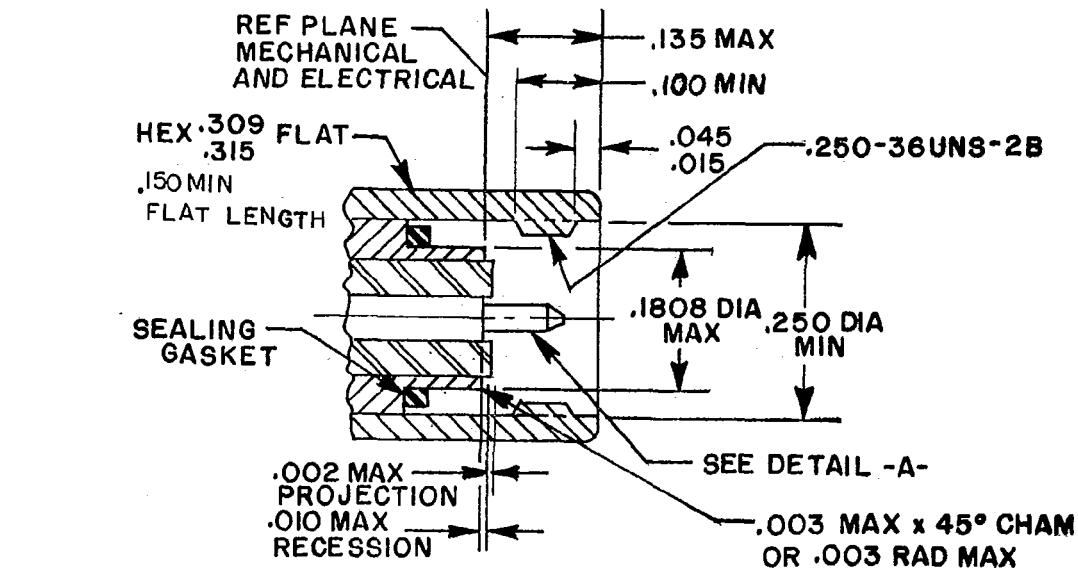
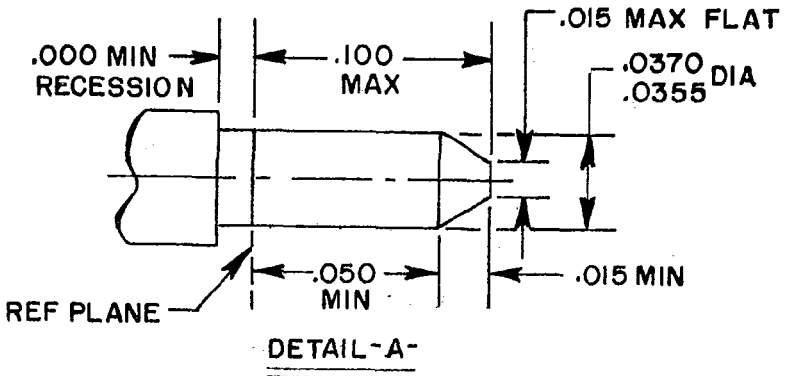
3. All undimensioned pictorial configurations are reference purposes only.

* 4. See Table 1.

FIGURE 8. Rear dielectric.





INCHES	MM
.002	.05
.003	.08
.015	.38
.0355	.901
.0370	.940
.045	1.14
.050	1.27
.100	2.54
.130	3.30
.135	3.43
.1808	4.592
.250	6.35
.309	7.85
.315	8.00

NOTES:
1. Dimensions are in inches.
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3. All undimensioned pictorial configurations are for reference purposes only.

FIGURE 9. Mating dimensions for pin terminations.

ENGINEERING PARAMETERS:

Nominal impedance: 50 ohms.

Voltage rating: 600 Vrms maximum at sea level.
150 Vrms maximum at 70,000 feet.

Frequency range: 0 to 18.0 GHz.

Temperature rating: -65° to 105°C.

REQUIREMENTS:

Design and construction: See figures 1 through 9 and table I.

Force to engage and disengage:

Torque - 2 inch-pounds maximum.

Longitudinal force - Not applicable.

Coupling proof torque: 15 inch-pounds minimum.

Inspection note: For each test of threaded coupling connector where the test is performed on mated pairs, the pairs shall be torqued to 7 to 10 inch-pounds.

Contact gaging: See figure 10.

Contacts with spring members:

Center contact (socket)

Oversize test pin - .0375 +.0001

Test pin finish - 16 microinches.

Insertion depth - .030/.045.

Number of insertions - 3.

Insertion force test: Steel test pin diameter .0370 +.0001.

Insertion depth - .050/.075.

Test pin finish - 16 microinches.

Insertion force - 3 pounds maximum.

Withdrawal force test: Steel test pin diameter .0355 - .0001.

Insertion depth - .050/.075.

Withdrawal force - 1 ounce minimum.

Test pin finish - 16 microinches.

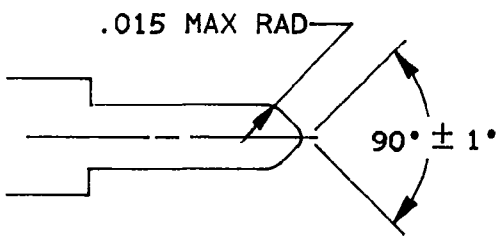

FIGURE 10. Test pin data.

TABLE I. Part number and characteristics.

Part no. M83517/11-	Basic connector figure no.	Transition pin figure no.	Rear dielectric figure no.	Remarks
31001	1	----	---	---
31002	2	----	---	---
31003	3	----	---	---
31004	4	----	---	---
31005	1	5A	---	.020 wide tab
31006	1	5B	---	.050 wide tab
31007	2	6A	---	.020 wide tab
31008	2	6B	---	.050 wide tab
31009	2	7	8C	.050 dia. terminal
31010	3	5A	---	.020 wide tab
31011	3	5B	---	.050 wide tab
31012	4	6A	---	.020 wide tab
31013	4	6B	---	.050 wide tab
31014	4	7	8C	.050 dia. terminal

Permeability of nonmagnetic materials: Applicable.

Seal:

Hermetic sealed connectors: Not applicable.

Pressurized and weatherproof connectors: Not applicable.

Insulation resistance: 5,000 megohms minimum.

Center contact retention:

Axial force: 6 pounds minimum.

Torque: Not applicable.

Dielectric withstanding voltage: Applicable, test condition I.

Test voltage 1,000 Vrms.

Corrosion: Applicable, test condition B.

Voltage standing wave ratio (VSWR):

Test frequency range: From .5 to 18.0 GHz.

Swept frequency VSWR test setup:

Step 1: See basic specification.

Step 2: VSWR shall be less than 1.080 +.005 frequency (frequency in GHz).

Item 11p VSWR shall be less than 1.025 + .002 frequency (frequency in GHz).

Item 11j VSWR shall be less than 1.025 + .002 frequency (frequency in GHz).

Step 3: VSWR shall be less than 1.05 + .005 f.

Test fixture - See figure 1 of basic specification.

Step 4: VSWR test shall be less than 1.05 + .005 f.

RF transmission loss: 0.15 dB MAX @ 6 GHz.

RF leakage: Not applicable.

Connector durability:

Interface:

500 cycles minimum at 12 cycles/minute maximum rate.

Connector shall meet contact gaging and force to engage and disengage requirements.

Transition pin:

100 cycles minimum at 12 cycles/minute maximum rate.

Contact shall meet contact gaging requirements.

Contact resistance: In milliohms maximum.

	Initial	After environment
Center contact:	6.0	8.0
Outer contact:	2.0	Not applicable

Thermal shock: Applicable, test condition A.

Moisture resistance: Method 106 of MIL-STD-202.

No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes after removal from humidity.

RF high potential withstanding voltage:

At a frequency between 5 to 7.5 MHz.

Leakage current - Not applicable.

RF voltage - 1,000 Vrms.

Coupling mechanism retention force: 60 pounds minimum.

Part number: M83517/11-(dash number from table I.)

Group qualification: See table II.

TABLE II. Group qualification.

Group	Submission and qualification of any of the following connectors 1/2/	Qualifies the following connectors
I	M83517/11-3†005	M83517/11-3†001 3†003 3†005 3†006 3†010 3†011
II	M83517/11-3†007	M83517/11-3†002 3†004 3†007 3†008 3†012 3†013
III	M83517/11-3†009	M83517/11-3†002 3†004 3†009 3†014

1/ Individual connectors other than listed are self qualifying only.

2/ Qualification of connectors qualifies connectors of the same material only.

† Denotes finish.

Custodians:
Army - CR
Navy - EC
Air Force - 85

Review activities:
Army - AR, MI, AT
Navy - SH, AS
Air Force - 11, 99
DLA - ES

User activities:
Navy - MC
Air Force - 19

Preparing activity:
Air Force - 85

(Project 5935-3159-11)